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COMMENTS ON

Beverage Containers in Maryland

Report of 11 Members of the Governor's Task Force to Study Legislation
Involving Mandatory Deposit on
Beverage Containers

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Introduction and Summary

Several comments are in order regarding statements, arguments and analyses contained in the report Beverage Containers in Maryland (hereinafter referred to as the BCIM report), prepared by 11 members of the Governor's Task Force to Study Legislation Involving Mandatory Deposits on Beverage Containers.

My comments are given on a chapter-by-chapter basis, retaining the format of the BCIM report. The major comments, which are developed fully in the subsequent sections, are summarized below.

- Outside evidence contradicts the BCIM report's contention that 16 percent of all beverage containers sold in Maryland end up as litter. In Vermont, before the deposit law, we estimate that 4.56 percent of beverage containers sold were littered; and in New York State, the estimated figure is 3.0 percent.
- In computing the cost of collecting littered beverage containers, the relevant cost is the marginal cost and not the average cost used in the BCIM report.
- In attempting to assess the effectiveness of the Keep America Beautiful, Inc. programs, the BCIM report fails to mention the Action Research Model (ARM), which has proved to be highly effective in reducing all litter, not just the beverage-container component. The failure of the authors of the BCIM report to assess this program's effectiveness cannot be attributed to lack of awareness on their part: the DECD report devoted three pages to discussion of this program, and I and others have mentioned the ARM in testimony before the Task Force.
- In calculating the contribution of beverage containers to solid waste costs, the BCIM authors use average costs, whereas marginal costs are the appropriate measure of social costs.
- Although the BCIM report carefully mentions that soft drink prices would be 2¢ per container cheaper under the Alternative III mandatory deposit system of the DECD report, they fail to mention the related conclusion of the DECD report: The expected increase in the price of supermarket products other than beverages would have amounted to over \$29 million in Maryland, because retailers spread their overhead costs over all food items. These added retailing costs are equivalent to over 3¢ per container, and thus exceed by 50 percent the apparent soft drink price reduction.

- Referring to a study on the effect of Oregon's bottle law on beer and soft drink sales, the BCIM report concludes that "the data and analyses do not show that the bottle law caused a decline in beer and soft drink sales in Oregon." Yet, the Oregon study concludes just the opposite for both beer and soft drinks.
- In attempting to reduce the estimates of consumer inconvenience costs made in the DECD report, the BCIM report virtually ignores the evidence offered by the Maryland beverage market: that when two beverages of the same brand and in the same size container--one a returnable and the other a nonreturnable--are available to the consumer at different prices, most consumers will choose the beverage in the more expensive, one-way container. Both in my testimony before the Task Force and in the DECD report itself, it has been asserted that this is considered stronger evidence of the consumer inconvenience costs than the statistical estimates derived and utilized in the cost-benefit analysis. The statistical estimates were used because they were lower, and therefore biased the analysis in favor of mandatory deposit legislation.
- The BCIM report's attempts to reduce the statistical estimates of consumer inconvenience are unsuccessful. The report relies on a University of Maryland honors paper prepared by Ms. Anne Streets. In "re-estimating" consumer inconvenience costs, (1) she inappropriately utilizes cross-section estimates of price and income elasticities for beer and soft drinks; (2) she fails to use these estimates correctly, even assuming their appropriateness; and (3) she attributes statistical bias to the DECD estimates, when, in fact, her rationale for this attribution is unfounded.
- Both Ms. Streets and the authors of the BCIM report fail to understand the distinction between a transitional effect and a permanent effect. They claim, for example, that if, after an initial drop, sales return to their historic growth levels, the sales effect is transitional. This claim is herein demonstrated to be untrue. Rather, it is shown that such sales behavior is indicative of a permanent effect.
- The BCIM report attempts to fortify its case for container legislation by relying on information which is influenced largely by transitional factors. For example, the report compares the operating income of the beverage industries in Oregon prior to the law with operating income after the law. Operating income is a volatile indicator and is influenced greatly by fluctuations in the business cycle. (On the other hand, the DECD report utilized the measure "long-term return on invested capital" as a more accurate measure of the permanent effect of mandatory deposit legislation on business income.)

- Questions raised before the Task Force by Mr. John Parry, one of the authors of the BCIM report, and to which I have already formally responded, are again raised in the BCIM report. Herein, I elaborate on my initial responses. However, there is one exception: I had originally conceded that there would be some distortion in the sales data estimates used in the DECD report as a result of the lowering of the drinking age in New Hampshire. Further reflection reveals that I had conceded too much. The lowering of the drinking age caused little or no decline in the sale of Vermont beer, as measured from the previous year, simply because beer sales in Vermont in the year prior to the deposit law included no legal sales of beer to persons in the 18 to 21 age group. Hence, the loss of this market to New Hampshire could cause no loss of beer sales to Vermont.
- The analysis of advertising presented in the BCIM report does not bear up under close examination. The authors of this report are challenged to produce a meaningful distinction between "artificial" and "legitimate" needs.
- The BCIM report's analysis of lobbying by the beverage industries is unrealistic. First, cost comparisons between industry efforts and proponents' efforts are inappropriate, as the latter include a substantial amount of volunteer labor which is not included in the costs. Second, for the beverage industries, lobbying is apparently the least-cost way of dealing with the container issue. From the viewpoint of these industries, they would be lowering their profits and increasing the total costs of beverages to their customers by acquiescing to container legislation.
- In discussing the employment effects, the authors of the BCIM report appear to be claiming that cans would likely retain their share of the beverage market under mandatory deposit legislation. While this claim apparently contradicts the Vermont experience, the fact remains that, if this claim were true, the benefits attributable to mandatory deposit legislation would be reduced considerably. While the increase in the use of cans--at the expense of refillable bottles--does not diminish the substantial costs of the container return system, it does significantly diminish the savings derived from the reuse of containers.
- The BCIM report draws several incorrect conclusions from the DECD study. These include: raw material suppliers other than the major supplier of steel to the Maryland can manufacturers are included in the DECD employment analysis; beer and soft drink sales under Alternative III are the same as under the status quo; much of the annual costs attributed to Maryland distributors include capital costs; and the DECD report fails to recognize the "potential for sale of equipment to out-of-state and overseas markets."

- The authors of the BCIM report attempt to dismiss the DECD report because it relied, they claim on 'speculative' information. Apparently, the authors have failed to understand how data have been used in our report. Information from the Maryland survey of beverage-related firms used in the DECD report pertained to costs, sales, prices, container mix, and engineering data on labor, capital and raw material use under the status quo. Little or no information was used on how these firms expected these factors to be influenced by container legislation. For this information, we relied largely on what had in fact happened in Vermont. Thus, we feel that the DECD report makes the maximum use of factual information, while placing little reliance on speculative information.
- The analysis of natural resource use in the BCIM report largely ignores the effect of resource prices on conservation in making projections of future resource consumption.
- The BCIM report is careful to note potential reductions in hazards to health resulting from mandatory deposit legislation. However, it minimizes or ignores potential increases in other hazards to health. These include injury from the increased handling of beverage containers; the unsanitary condition imposed by unclean empties primarily in the household, but in the container return system as well; and the small but finite likelihood of foreign matter remaining in containers after refilling.

1. Litter (BCIM report, Chapter I)

Page I-4 of the BCIM report relates that in Maryland, "16 percent of all beverage containers sold show up as litter." This figure was arrived at by inflating the number of littered containers per mile, found during a litter survey, by the number of miles of roadway in the State. The survey was conducted by the Maryland State Highway Administration.

I have thoroughly examined the materials upon which this litter survey was based. Unfortunately, the survey was ill-designed for eliciting statistically significant data on littering rates in the State. The Chief of each Bureau of Maintenance in Maryland's seven highway districts was instructed to select a total of six one-mile sections of representative highways in the State; two sections would be high litter, two medium litter and two low litter. The sections selected were to "include a sample of controlled access, uncontrolled access (both two and four lane) in rural, urban and suburban areas." Thus, the sample was intended to be stratified. However, little or nothing is known (particularly with regard to littering intensity) about the relative importance of each category with respect to all roadways in the State. But, the more serious objection to the methodology is that none of the sample sections was selected by a random sampling technique; rather they were chosen by the Bureau Chiefs. Consequently, none of the results of the litter survey is amenable to statistical analysis.

There is evidence to suggest that the 16 percent litter figure mentioned above is way out of line. For example, I have calculated the percent of beer and soft drink containers littered in Vermont and made some estimates for New York State. For Vermont, in the months of June, July

and August (relatively high litter months), 25,403 containers were littered over 177.8 miles of roadway,¹ or 143.9 containers per mile, immediately prior to the bottle law. Assuming that this littering rate was maintained during the other 9 months, then 571.5 containers per mile were littered each year.

Vermont has 13,836 miles of roadway.² Thus, 7.9 million containers (or $571.5 \times 13,836$) may have been littered over all of the roadways in the year prior to Vermont's bottle law. During the same period, 105 million beer containers and 68.5 million soft drink containers were estimated to have been sold.³ This means that 4.56 percent of all containers sold in Vermont were littered.

Unfortunately, it is not possible to make a similar estimate for Oregon. First, this sample was conducted only on primary roads in the state, and these have a significantly higher level of traffic volume than other roads. Second, beverage containers other than those affected by the Oregon law (such as milk cartons) were included in the beverage container litter count.

Turning to New York State, however, the Research Triangle Institute estimates that 240 million beverage containers were littered in 1973.⁴ In the same year, soft drink sales were estimated at 380 million gallons and beer sales at 359 million gallons. Using 12 ounces as the average size container, I calculate that 3.0 percent of all containers sold were littered. Thus, the 16 percent figure for Maryland appears to be highly at variance with the corresponding figures for Vermont and New York State.

¹See DECD report, Appendix I of Chapter V.

²Statistical Abstract of the U.S., 1976, p. 587

³Milton J. Nadworny, Some Economic Consequences of the Vermont Beverage Containers Deposit Law, p. iv.

⁴Task Force on Critical Problems, New York State Senate, No Deposit No Return, A Report on Beverage Containers, p. 98 and Appendix G.

Page I-4 of the BCIM report notes that:

Nationally, the cost range for litter clean up is 1-8 cents per container collected and in Maryland it exceeds 5 cents per container picked up as litter... If the cost of litter disposal, capital costs of equipment, and disutility of litter are included, the complete cost of container litter collection and disposal in Maryland is estimated at 2.68 cents per beverage container sold.

The main problem with this estimate is that it relies on the average cost of collecting beverage containers, rather than the marginal cost. This point was emphasized in the DECD study on page V-5. To quote: "as long as other litter is also collected, the relevant cost is the marginal cost of collecting beverage containers, and the marginal cost would seem to be significantly less than the average cost, at least for collecting up to 90 percent of the containers littered along roadways."

The major costs associated with litter collection are the administrative costs of the highway administration, which are overhead costs; the cost of the trucks and other equipment; the cost of getting the equipment to the litter collection site; and the time spent for personnel to walk along the highways collecting the litter. These costs, except the last, will remain approximately constant regardless of whether beverage containers are among the highway litter. The addition of beverage container litter means that highway crews will expend more time in covering a given distance of roadway. This extra cost alone is relevant in determining the cost of collecting littered beverage containers.

The BCIM report recognizes several of Keep America Beautiful, Inc., (KAB) programs to reduce litter. It documents KAB expenditures on advertising and concludes that these programs have "failed to eliminate litter just as education and public service commercials have failed to stop smoking."⁵

⁵ BCIM report, p. I-6.

No evidence suggests that these programs have failed to reduce litter to levels below what they otherwise would have been; indeed, in the absence of a controlled experiment, it seems difficult to produce any evidence whatsoever to assess their effectiveness. Nevertheless, the BCIM report states its conclusions without mentioning the effectiveness of KAB's Action Research Model, now known as the Clean Community System, although this program was discussed in detail in Chapter V of the DECD report. (This is just one of several examples in which evidence damaging to the BCIM position is absent from its discussion.) The Action Research Model has consistently reduced the volume of litter by 65-70 percent in every place where it has been in effect for at least a year. Let me emphasize that these reductions are in total littered volumes, not just in the beverage container component.

2. Solid Waste (BCIM Report, Chapter II)

Page II-3 of the BCIM report relates that "in Maryland, the cost of collecting, transporting, and disposing of beverage containers as solid waste is variously estimated at from \$1,000,000 annually after they are collected to \$6,675,000 for all costs using a straight line method of computation." Both of these figures are average costs and, as such, they are open to the same criticism given above for estimates of litter collection costs. However, in the case of the one million dollar figure, the marginal cost is approximately equal to the average cost, so it is appropriate. But the same cannot be said for the second figure. This is simply because non-beverage-container trash must be collected and transported regardless of the presence of beverage containers.

There is one comment I would like to make on landfilling and landfilling costs. It is conceivable that sometime, perhaps in the near future, it will be economical to mine landfills to recover resources

presently concentrated in them. Our analysis of the Baltimore City pyrolysis plant, summarized on Table VI-12, page VI-20 of the DECD report, indicates that such a plant is economically viable at a total investment of \$20 million. Although our figures are based on the projected costs and revenues of this plant, which is not yet operational, a plant with the projected characteristics could make it possible to profitably mine landfills to recover their resources. Since 20 percent of incinerated solid waste would require disposal in landfills, the implication is that the refuse in 5 landfills of equal volume could be reduced to one landfill site, leaving four sites completely vacant for reuse. Further, I have read recently that attempts are currently underway to recover for commercial use the methane gas that is naturally emitted by landfills.

3. Beverage Prices and Sales (BCIM Report, Chapter III)

There is another serious omission in the BCIM report, pertaining to its page III-3 discussion. While the DECD report has indeed estimated that the average soft drink would have dropped by nearly 2¢ per container under Alternative III, the expected increase in the price of supermarket products other than beverages would have amounted to over \$29 million in Maryland, because retailers spread their overhead costs over all food items. These added retailing costs are equivalent to over 3¢ per container, and thus exceed by 50 percent the apparent price reduction. On the other hand, all retailing costs have already been allocated in the case of beer, so beer prices could be expected to decline by about 2/3 of a cent per container.

On page III-4 of the BCIM report, the probable effect on sales is discussed, and mention is made of Dr. Clopper Almon's criticism of the demand equation coefficients used in the DECD report. On a national level, there is nothing to suggest that a problem exists with our estimates.

As long as the equations are correctly specified, these coefficients are unbiased and have minimum variance. To criticise these estimates it is necessary to show that there are specification errors. More will be said on this point when I discuss the concept of consumer convenience.

In examining the effect of Oregon's bottle bill on beer sales, the BCIM report notes: "After adjustment during the first year (in which beer sales only increased 1.37 percent), beer sales have returned to their historical growth rate, with a 5.67 percent increase registered in the second year."⁶ The above statistics are misleading since they combine packaged and non-packaged beer sales. According to the Applied Decisions Systems (ADS) report:

As the figures show, packaged sales declined by a fraction of a percent during the July, 1972 to June, 1973 period compared to the same period a year earlier. The draught category continued to increase at approximately its historical annual growth rate of over 5 percent.

The packaged beer sales decline continued at least through March, 1974. For the three quarters, July, 1973-March, 1974, packaged sales were down an additional 0.6% below the July, 1972-March, 1973 level. However, draught beer sales were up 4% to 9% above the previous year. The continued growth of draught sales, as is indicated by every criteria examined suggests that the reduction in sales of packaged beer is a result of the Minimum Deposit Law and not a general decline in consumer interest in beer.

On soft drink sales, the BCIM report refers to the study by Applied Decision Systems (but obtains the information from a secondary source) and concludes that the "available data and analyses do not show that the bottle law caused a decline in beer or soft drink sales in Oregon." Yet, when we refer directly to the primary source, we find--for soft drink sales--the following paragraph of interest:

⁶BCIM report, pp. III-5, 6.

⁷Applied Decision Systems, Project Completion Report for Study of the Effectiveness and Impact of the Oregon Minimum Deposit Law, October, 1974, p. II-79.

The sales levels of the state's franchise brands appeared to have increased by a moderate amount in the year following the law. Sales growth may have slowed by 1% to 3% in the law's first year, but sales were at least 4% above the prior year's level. On the other hand, the sales levels of the private label and warehouse brand producers declined very substantially (approximately 40%) after the law. The total sales of contract canners in Oregon were lost, but sales of contract canners out-of-state appear not to have declined. On balance, the losses of private labels and warehouse brands were so great that they outweighed the growth of the much larger franchise volume and held the total market changes to zero or a slight decline. It is not clear yet whether the market's former growth rate will be re-established or a new trend will develop. The only evidence so far is that in the first year after the law total sales did not grow at all, and, by the containers measure, declined.⁸

In the case of Vermont, the BCIM report observes a different situation: "...beer and soft drink sales did decline after implementation of the law; estimates show beer sales down 13 percent by May, 1974. Hard liquor sales, although not affected by the mandatory deposit law, also decreased 15 percent during this period."⁹ However, looking for a trend over one-year periods, one finds that:

While [Vermont] State revenues for beer were lower on fiscal year and December-November bases, revenues increased during similar periods for wine, income, rooms and meals, and sales and use taxes. Furthermore, beer sales increased in New Hampshire and New York, and especially along the Vermont borders. ¹⁰In addition, beer tax revenues increased in New Hampshire.

The BCIM report concludes the Vermont sales analysis by observing that "Vermont distributors had accumulated inventories of beer in one-way containers ... in anticipation of the law. When the law came

⁸ Applied Decision Systems, Project Completion Report for Study of the Effectiveness and Impact of the Oregon Minimum Deposit Law, October, 1974, p. II-27.

⁹ BCIM report, p. III-6.

¹⁰ Milton J. Nadworny, Some Economic Consequences of the Vermont Beverage Containers Deposit Law, p. vi.

into effect, they simply sold off their stock of one-way containers, thereby inflating the previous year's distributors sales and deflating their subsequent year's sales."¹¹ This sounds plausible, but a little analysis suggests its improbability. The Vermont law took effect on September 1, 1973, immediately following the summer season. It is common knowledge that distributors maintain heavy inventories of beverages immediately prior to and throughout the summer season, which is their peak-sales period. The question, then, boils down to whether inventories were maintained above the normal seasonal level. For the most part, the capacity of warehousing facilities is geared to the peak. While some distributors may have constructed warehousing capacity in excess of their peak requirements, in anticipation of growing sales, this would not usually be the case. Thus, the ability of distributors to stockpile one-way beverages much in excess of their peak inventory during the peak season would appear to be severely limited.

4. Consumer Convenience (BCIM report, Chapter IV)

Regarding the discussion of the consumer convenience "construct", the BCIM report states that "an economist is not trained in understanding human behavior, at least not in the same sense as a psychologist. Oftentimes, when an economist makes an assumption concerning human behavior it is nothing more than that--an assumption."¹² The concept of consumer convenience, as used in the DECD report, is not an assumption, at least not in the usual meaning of that word. Rather, the concept forms the basis for an hypothesis, and, as such, it can be tested.

¹¹BCIM report, p. III-7.

¹²BCIM report, p. IV-1

On page 9 of Ms. Strees' study, she writes, "cross-sectional studies demonstrate that Tawil's estimates of income elasticity for beer is too low and income elasticity for soft drinks is too high. Incorrect estimates of income elasticity would tend to bias price elasticities of demand." First, cross-sectional studies do not demonstrate any such thing. Cross-sectional estimates may be in conflict with our estimates, but they measure something different. Generally speaking, when one is concerned with year-to-year (time) changes in variables, estimates from time series are more appropriate than cross-sectional estimates. On the other hand, when one is primarily concerned with differences among regions, for example, then cross-sectional estimates are preferred. The reasons for this relate to the interpretation to be given to the model and can be found in almost any elementary econometrics textbook.¹⁶

As should be clear from the context of our model, we were interested in determining year-to-year changes in beverage consumption behavior in Vermont and Oregon. Specifically, we wanted to compare consumption before a mandatory deposit law and consumption after such a law had been in effect. Given this, time series estimates can be expected to have more reliability.

Ms. Strees then proceeds to recalculate consumer inconvenience by plugging the cross-sectional estimates of the elasticities into our equations. Unfortunately, this is simply not acceptable econometric practice. At minimum, the equations should be re-estimated with the elasticities constrained at the prescribed values; but even this technique would be difficult to justify, as there are valid reasons for believing that cross-section estimates of price and income elasticities should differ

¹⁶For a good discussion of the appropriateness of time-series and cross-sectional techniques, see Carl F. Christ, Econometric Models and Methods, John Wiley and Sons, Inc., New York, 1968, pp. 102ff.

In the DECD report, we put this hypothesis to two tests. One is statistical and will be discussed further below. We also employed a market test. We have seen widespread evidence that when two beverages of the same brand and in the same size container--one a returnable and the other a nonreturnable--are available to the consumer at different prices, most consumers choose the beverage in the more expensive one-way container. We think this observable phenomenon strongly supports the consumer convenience hypothesis.

In various testimony which I have given before the Beverage Container Task Force, I have emphasized that if consumer convenience is to be "explained away," then a convincing alternative explanation must replace it. I have yet to see such an explanation. Rather, questionable devices are used in an attempt to reduce our statistical estimate of consumer inconvenience. Indeed, my reply to one of Mr. Parry's questions emphasizes this point:

As stated in our report, and [as] I have repeatedly emphasized in my testimony before the Task Force, we do not claim our statistical estimates of the consumer convenience factor to be precise. Rather we have suggested that market phenomena observable in Maryland indicate rather strongly that Maryland consumers place a higher value on convenience than the value used in our study. It would seem to me that those who wish to minimize the value of consumer convenience must concentrate their efforts in explaining (away) consumer preferences for beverages in the higher priced containers. These are readily and directly observable phenomena and, in my opinion, are difficult to deny.¹³

Additional evidence, which I have also supplied, appears on page E-8 of the BCIM report. I might add that had we been unable to derive a statistical estimate for P_3 , the consumer inconvenience variable, it is likely that we would have used the value of 4¢ per container for soft drinks as a conservative estimate for this factor. We used the 3.6¢ figure because

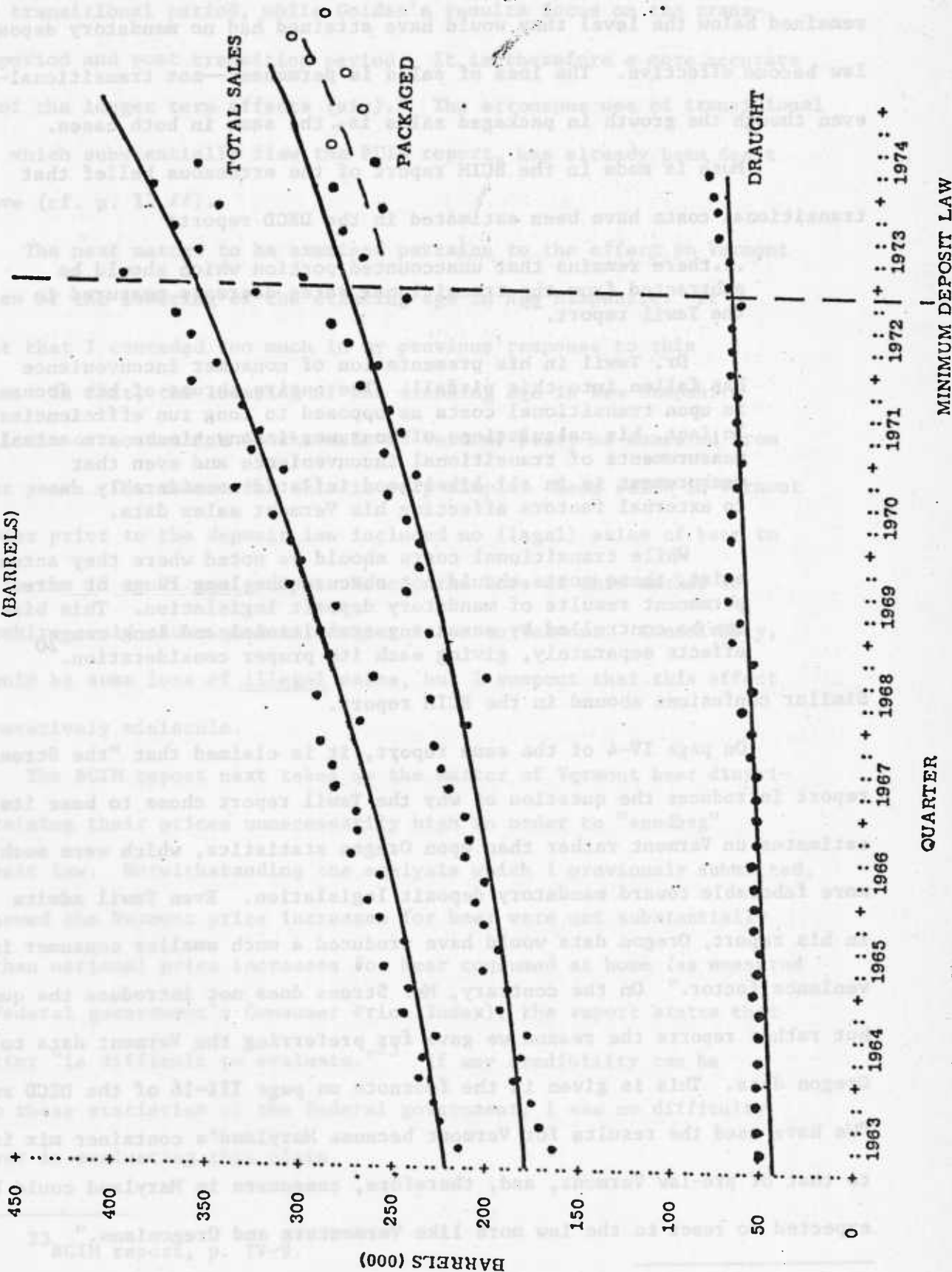
EXHIBIT II-13

QUARTERLY OREGON BEER SALES

SEASONALLY ADJUSTED

JAN., 1963 - MAR., 1974

(BARRELS)



II-84

a. fixed vertical distance below the solid line. This means that sales remained below the level they would have attained had no mandatory deposit law become effective. The loss of sales is permanent--not transitional--even though the growth in packaged sales is the same in both cases.

Much is made in the BCIM report of the erroneous belief that transitional costs have been estimated in the DECD report:

...there remains that unaccounted portion which should be subtracted from the transitional sales decrease measured in the Tawil report.¹⁹

Dr. Tawil in his presentation of consumer inconvenience has fallen into this pitfall. The entire thrust of his focus is upon transitional costs as opposed to long run efficiencies. In fact, his calculations of consumer inconvenience are actually measurements of transitional inconvenience and even that measurement is in all likelihood inflated considerably due to external factors affecting his Vermont sales data.

While transitional costs should be noted where they actually exist, these costs should not obscure the long range or more permanent results of mandatory deposit legislation. This bias can be controlled by assessing transitional and long range effects separately, giving each its proper consideration.²⁰

Similar confusions abound in the BCIM report.

On page IV-4 of the same report, it is claimed that "the Strees report introduces the question of why the Tawil report chose to base its estimates on Vermont rather than upon Oregon statistics, which were much more favorable toward mandatory deposit legislation. Even Tawil admits in his report, Oregon data would have produced a much smaller consumer inconvenience factor." On the contrary, Ms. Strees does not introduce the question, but rather reports the reason we gave for preferring the Vermont data to the Oregon data. This is given in the footnote on page III-16 of the DECD report: "We have used the results for Vermont because Maryland's container mix is similar to that of pre-law Vermont, and, therefore, consumers in Maryland could be expected to react to the law more like Vermonters and Oregonians."

¹⁹ BCIM report, p. IV-11.

²⁰ BCIM report, pp. IV-15

The report goes on to charge that "Tawil's data includes (sic) only the transitional period, while Golden's results focus on the transitional period and post transition period. It is therefore a more accurate picture of the longer term affects (sic)." The erroneous use of transitional effects, which substantially flaw the BCIM report, has already been dealt with above (cf. p. 12 ff).

The next matter to be examined pertains to the effect on Vermont beer sales of the lowering of the drinking age in New Hampshire. It turns out that I conceded too much in my previous response to this criticism. In fact, the lowering of the drinking age in New Hampshire caused little or no decline in the sale of Vermont beer, as measured from the prior year. The reason for this is very simple: Beer sales in Vermont in the year prior to the deposit law included no (legal) sales of beer to persons in the 18 to 21 age group. Hence, the loss of this market to New Hampshire could cause no loss of beer sales to Vermont. Conceivably, there could be some loss of illegal sales, but I suspect that this effect was comparatively miniscule.

The BCIM report next takes up the matter of Vermont beer distributors raising their prices unnecessarily high in order to "sandbag" the deposit law. Notwithstanding the analysis which I previously submitted, which showed the Vermont price increases for beer were not substantially higher than national price increases for beer consumed at home (as measured by the Federal government's Consumer Price Index), the report states that this matter "is difficult to evaluate."²³ If any credibility can be given to these statistics of the Federal government, I see no difficulty whatsoever in evaluating this claim.

²³BCIM report, p. IV-9.

In sections D, E and F of Chapter V, the BCIM report repeats some of the problems posed previously before the Task Force by Mr. Parry and my responses to these problems. Since the text of the report does not accurately convey the sense of my responses, the reader is referred to Appendix E of the BCIM report, where my actual responses have been reproduced.

One of the problems previously raised by Mr. Parry pertained to the effect of "the disastrous ski season, the floods, the gas and oil shortages...on the available sales data," which we used in estimating consumer inconvenience in Vermont. In responding to this problem, I referred to a study by Professor Nadworny,²¹ in which beverage sales in areas of New York and New Hampshire were compared with beverage sales in Vermont. The areas in the former states border Vermont and were selected because they were most likely to have been affected by the "disastrous" conditions previously noted in the same way that Vermont was affected.

Obviously, if we wish to enquire into the effect these conditions had on beverage sales in Vermont, then we should examine their effect in places similar to Vermont, but in which a mandatory deposit law was not imposed. Thus, it would be highly inappropriate to compare Vermont sales with sales in, say, New York City. Yet, according to the BCIM report, Forest Golden criticizes us for restricting our comparison to areas which we believe are comparable: "the data Tawil used was overly narrow and therefore not adequate for making comparisons."²² There is another point worth making here. To the extent that the decline of tourist activity was correlated with incomes in Vermont, part of the effect of the floods and declining tourist activity has already been taken into account in our demand estimates.

²¹Milton J. Nadworny, Some Economic Consequences of the Vermont Beverage Containers Deposit Law, p. 5ff.

²²BCIM report, p. IV-8.

nothing but peanuts and soybeans (food), tents (shelter) and minimal clothing. I think that most people would reject this view out-of-hand. If so, we are talking about products unnecessary for subsistence, but necessary for something else. It is this "something else" which defies definition, because the definition of what is necessary must be arbitrary. Products which I find essential for my well-being others may find frivolous and my need for them "artificial". And vice versa. If this is not the situation, I would be most interested to learn of the distinction between "legitimate" and "artificial" needs implied in the BCIM report, for I am unable to make such a distinction myself.

The effect of lobbying and lobbying costs on the prices of products is also considered in Sections G and H. Essentially, the argument is that if beverage industries did not lobby against mandatory deposit legislation, prices of beverages would be lower and everyone would be better off. However, this sword is two-edged: If small but vocal interest groups did not push enthusiastically for mandatory deposit legislation, then the beverage industries would find it unnecessary to engage in lobbying and could lower their beverage prices. This would make everyone better off.

Obviously, both of these views are too simplistic. Beverage industries have an obligation to their owners and stockholders to promote the industries' self-interests. These industries apparently find it less costly to engage in lobbying activities than to acquiesce to mandatory deposit legislation. Thus, they are fulfilling their obligations to their owners and stockholders. But since their profitability derives from their ability to satisfy the consumer, they must serve his or her interests as well. (In general, only lobbying efforts to limit competition or conceal information of value to consumers are inimical to the interests of consumers.)

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However, the report goes on to say that regardless of whether I have properly evaluated the reason for the price rise, "we have a price rise which would not be related to the deposit bill, which depressed sales, and which was not reflected accurately in Tawil's results. However, if the price rise was unnatural, forced by either wholesalers or retailers, an additional factor must be taken into account."²⁴ To show that this does not follow, one must only note that this price rise was an observed effect. Therefore, its influence on sales was already measured by the price variable. Nothing remains to be taken into account.

The final "dispute" noted in this section "is whether or not New Hampshire stores sold their beer at reduced prices in order to draw business away from Vermont. "...if wholesale prices went up everywhere as Tawil has suggested, it would be relatively easy to sell beer at a lower profit margin or even at a loss without reducing the price."²⁵ It is always "easy" to reduce prices if one is willing to sell a product at a loss. The fact that most businesses seek to avoid losses, however, indicates how patently weak this argument really is.

Sections G and H of the BCIM report treat the effect of advertising in creating "artificial needs" by "manipulating" the consumer. While I have already responded to this view of advertising (cf. pp. E-6, 7; BCIM report), I would like to consider here the concept of "artificial needs." While this is a "sexy" concept, it is too often accepted without critical appraisal.

What exactly is an "artificial need?" Is it any need not essential to subsistence? If so, then presumably we should consume

²⁴ BCIM report, p. IV-9.

²⁵ BCIM report, p. IV-11.

The proponents of beverage legislation believe that they are performing a service to society by "lobbying" for beverage legislation. Their dedication to the interests of the consumer and to society in general is unquestioned, at least by me. On the other hand, we have prepared a report which we believe to be slanted in favor of mandatory deposit legislation, but which shows that such legislation is simply not in the best interests of society and the consumer.

Thus, there are sincere but opposing convictions on all sides. As nearly as I can tell, the industry representatives on the Task Force would be literally shocked if the proponents simply withdrew from the "battlefield;" yet the proponents fault the industry for not themselves withdrawing.

Before considering the discussion of employment effects of beverage legislation, as reported in the BCIM report, two additional points are worth noting. Pages IV-13 and IV-14 relate that "...both beer and soft drinks are relatively inelastic as to price..." The source given is: John Mitchell, "Keeping America Bottled (and Canned), Audobon 78:106 (March 1976). However, Anne Strees correctly notes that "higher price elasticities would result in lower estimates of consumer inconvenience. The higher the price elasticity, the more sensitive a consumer is to price changes."²⁶ It is recalled that Ms. Strees used much higher price elasticities than those estimated in the DECD report to come up with lower values for consumer inconvenience. Which of their sources would the BCIM authors have us believe, Strees or Mitchell?

The second point concerns the claim that:

Consumers could cooperate by washing their containers before they are returned to the retailer or redemption centers. In Maine,

²⁶ Anne Strees, Economic Impacts of Bottle Legislation in Maryland, p. 10.

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mandatory deposit legislation specifically provides that a retailer need not accept bottles which are not "reasonably clean".²⁷

As noted in the DECD report, Vermont, too, has such a requirement:

Most of the Vermont retailers we interviewed commented on the potentially unsanitary conditions created by the empties. Although the Vermont law stipulates that a retailer need not accept empties which have not first been cleaned, in practice, retailers have found that to avoid generating ill will, they must accept them.²⁸

5. Employment (BCIM report, Chapter V)

This chapter of the BCIM report begins with a discussion of whether the Oregon or Vermont experience is more appropriate for determining the employment effects of mandatory deposit legislation. After observing that "the relative ease with which the law was implemented in Oregon was undoubtedly affected by the fact that 32 percent of beer sales and 60 percent of soft drink sales in the state were already in returnable bottles prior to the legislation", the report continues that "in Vermont, the presence of uncooperative retailers plus a number of other factors mentioned previously obscure the effects of such legislation and make Vermont a much less reliable source of base information."²⁹

Since such a significant portion of the Oregon beverage market was already in returnable containers, a substantial portion of the costs and employment of providing the return system was already in place. Thus, the additional costs and employees required to place Oregon's beverage market on a fully returnable basis are not really applicable to Maryland, whose market is almost totally in one-way containers.

The "presence of uncooperative retailers" in Vermont, whether true or untrue, is really irrelevant, as the self-interest of Vermont retailers

²⁷ BCIM report, p. IV-16.

²⁸ DECD report, p. IV-28.

²⁹ BCIM report, p. V-3.

would dictate that they minimize their costs and add as few extra employees as necessary. It would seem, therefore, that the Vermont experience is more relevant to assessing the effect of deposit legislation in Maryland.

Following a discussion of the employment effects, as measured in the DECD report, the BCIM report states, "the assertion that stores in Vermont went out of business due to the deposit law was met with an emphatic denial by Vermont Environmental Director Donald Webster."³⁰ Whether the assertion or the denial is true, I cannot recall. However, I do not believe such an assertion appeared in the DECD report.

The BCIM report also implies that our estimate of employment losses among raw material suppliers encompasses suppliers other than metal suppliers.³¹ As the DECD report makes clear, the only raw material supplier considered "is the principal supplier of steel to the metal container manufacturers."³²

The BCIM report, page V-5, claims that "in Vermont, it is reported that refillable bottles are replacing non-refillables but they are not replacing cans." We believe this information to be incorrect. The container mix projected for Maryland is based on the container mix resulting from the Vermont legislation. Information from one of the Vermont distributors, which I have received since the DECD report was released, indicates that the Vermont soft drink market now consists almost entirely of refillable containers.

If this information is incorrect, however, and cans have recaptured their pre-law share of the Vermont market, then our results for Maryland would attribute too large a benefit to mandatory deposit legislation. The major savings from such legislation derive from reusing containers, and

³⁰BCIM report, p. V-3.

³¹BCIM report, p. V-4.

³²DECD report, p. IV-38.

Since the BCIM report (page V-9) discusses the effect of the phase-in costs of bottle legislation, it should be noted that the DECD report excludes all costs attributable solely to the transitional phase.³⁴

6. Economic Impact on Industry and Government (Chapter VI, BCIM report)

On page VI-5 of the BCIM report, it is stated that "beer sales were estimated to be 36 million cases per year for both systems (Tawil's estimate for beer sales under the status quo).\" The DECD report projects beer sales under Alternative III at 32 million cases per year. Thus, the costs for breweries under the status quo are based on 36 million cases, while those under Alternative III are based on 32 million cases. This error leads to the miscalculation of distributors' costs under the 5¢ mandatory deposit system in the case of beer (cf. Table VI-3, page VI-6, BCIM report). The correct value should be 36,880,336, rather than 41,472,228. Also, under Alternative III, soft drink sales are estimated at 37.87 million cases, so the corresponding soft drink figure should also be corrected.

The BCIM report states that "much of these costs represent capital investments (\$10 million and \$13 million for beer and soft drink distributors, respectively)...."³⁵ This is not true. The costs include depreciation of the capital investments as well as the imputed return on the additional investments, but not the capital investments themselves.

In Section G of this chapter, the BCIM report states: "not fully recognizing the potential for sale of equipment to out-of-state and overseas markets, Tawil probably overstates the loss when he states that \$23,722,910 is the appropriate figure for total capital loss under a mandatory deposit system." However, on page IV-39 of the DECD report, we find:

³⁴See, for example, p. I-12, Executive Summary, DECD report.

³⁵BCIM report, p. VI-6.

cans are not reusable; a larger can share of the market would not yield offsetting savings in the costly return system. Thus, if the authors of the BCIM report choose to reject our assumption that cans would be substantially replaced by refillable bottles, then they must also accept a substantial reduction in the benefits deriving from mandatory deposit legislation.

An idea of the gains from reducing the can share of the market is obtained by comparing the social costs under Alternative I, which bans the can completely, and Alternative II, which assumes a 20 percent share for cans in the beer market and a 23.6 percent share in the soft drink market. The additional social costs attributable to the presence of cans under Alternative II amounts to nearly \$8 million annually.

A major conclusion of this chapter is that:

the increased automation and mergers has (sic) led to a decline in employment levels within the beverage industry and this decline is likely to continue. A mandatory deposit system would arrest and possibly reverse these trends, by halting the trend towards centralization of the soft drink and malt beverage industries and by providing a net increase in the number of jobs available due to the labor-intensive characteristic of the returnable system.³³

While the conclusion of this argument is probably true, the increased automation and trends towards centralization are cost-saving trends. Thus, if we are to base our analysis on projected characteristics of the industry, beverage prices under Alternative III, as compared with the status quo, would be even higher than estimated in the DECD report. (The analysis of the DECD report measures the social costs of a mandatory deposit law in Maryland, had it been effective in 1974.)

³³ BCIM report, p. V-10.

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For the DECD report, we did considerable cross-checking to insure that our data estimates were reliable. For example, for most of the industries we constructed balance sheets to see if estimates of costs and profits were reasonable, i.e., if they were consistent with observed and expected market phenomena. We also attempted to gather much of the data, especially concerning the costs of machinery, from many different sources, to verify the reliability of these cost estimates.

The BCIM report goes on to state:

Tawil's study represents an investigation of transition costs, or costs of changing a non-refillable system to a refillable system. It is not an analysis of the comparative costs of a non-refillable versus refillable system. Tawil does not account for a possible phase-in period. If given notice that legislation is forthcoming, industries would have the opportunity, when building new lines or replacing old lines, to install lines for refillable containers. This would greatly reduce the initial capital investments to the industry.³⁷

As stated at bullet 3, p. I-12, of the DECD report, none of these transitional costs is included. None of the costs of "changing a non-refillable system to a refillable system" is considered. The DECD analysis is strictly "an analysis of the comparative costs of a non-refillable versus refillable system," although phase-in costs are relevant social costs.

Section I, Chapter VI of the BCIM report deals with the effects of the Oregon law on the beverage industries in Oregon. The first effect examined is operating income. Year-to-year changes in operating income are not a reliable indicator of the effects of the beverage law on the long-term profitability of an industry. It should be noticed that, because of the 1971-72 recession, sales of beverages in Oregon were probably at depressed levels. As the Oregon beverage industries recovered from the recession, in 1973, along with the rest of the national economy, sales and operating income, therefore, should increase, apart from any effects of bottle

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³⁷BCIM report, p. VI-10.

to the bottle law would be partially offset by the improving economic conditions. The income losses attributable to deposit legislation are, therefore, likely to be understated by these operating income data.

This section also examines the effect of deposit legislation on capital losses, change-over costs and new investments in Oregon. It should be noted that the methodology employed by Gudger and Bailes³⁸ was to look at the first-year effects on these economic parameters. Thus, their data largely measure transitional effects, rather than the long-term effects measured in the DECD report.

With respect to Vermont, the BCIM report states:

Unfortunately, no comprehensive data are available on the costs of production, investment or profit changes in Vermont as a result of the law. The fact that Dr. Tawil based many of his assumptions on the Vermont experience therefore detracts from the credibility of his findings.³⁹

This type of data, which the BCIM report claims is necessary for assessing these impacts, is really of limited usefulness if one wishes to determine long-term, rather than transitional, effects. What the DECD report did was attempt to construct the engineering production functions necessary to produce a given volume and mix of beverage output. That is, using actual production conditions, we attempted to arrive at a best estimate of the type of equipment, physical space requirements and labor requirements for producing a given mix and level of output. Further, instead of looking at operating income changes over any period, we calculated the long-term return on the investment necessary to keep these additional resources in the

³⁸ Gudger and Bailes, The Economic Impact of Oregon's "Bottle Bill," 1974.

³⁹ BCIM Report, p. VI-13.

beverage industry. Thus, the effects measured in the DECD report are strictly long term, excluding effects resulting from such short-term phenomena as fluctuations in the business cycle and change-over costs.

Section K of the BCIM Report examines the cost of resistance to deposit legislation by the beverage industries. While I have already commented on this aspect of the beverage controversy, let me add that comparisons between the amounts of money spent by the industry and the amounts spent by proponents of bottle legislation are very deceptive: much of the activity for advancing bottle legislation is conducted by substantial numbers of volunteers; this is not the case for the opponents of bottle legislation. Were a dollar value to be imputed to these volunteer efforts, it is quite conceivable that the efforts by the proponents and opponents of such legislation would be comparable.

In assessing the tax impact resulting from container legislation, the BCIM report states: "earlier sections of this report indicate, however, that although a slight drop in sales may occur during the first year following the laws' implementation, there is no reason to expect a significant drop in sales due to a mandatory deposit system."⁴⁰ As I have shown earlier, the evidence suggests that, although beverage sales may grow at their historical growth rate following the first year of mandatory deposit legislation, these sales remain below what they would have been in the absence of deposit legislation. The faulty conclusion of the BCIM report results from mistaking post-law growth rates for long-term effects on sales.

⁴⁰ BCIM report, p. VI-15.

7. Energy Demand (BCIM report, Chapter VII)

The BCIM report's discussion of the energy implication of container legislation relies almost entirely on the energy analysis contained in the DECD report. In turn, the analysis of the DECD report relies largely on the preliminary findings of the FEA study. During the task force meeting, at which an FEA representative gave testimony on the energy issue, I had occasion to speak with him about the final version of this study, as compared with the preliminary version upon which we relied. He informed me that some of the energy requirements estimates had been revised in the final version due to calculation errors in the earlier version. Although I do not know which FEA estimates were in error or the effect of these errors on our calculations, a comparison of the energy requirements should be made between the tables in the final FEA version and the tables of energy requirements in the DECD report.

8. Natural Resource Impact (BCIM report, Chapter VIII)

Although the treatment given to raw material use in the DECD report is brief, I feel that it is fully adequate. Two important points are made in this discussion:

That fewer resources are consumed in the manufacture of beverage containers where refillable containers are widely used is indisputable. However, the value of these resources would be accurately reflected by their market prices if the markets in which they are produced are competitive. However, if the firms which supply these resources do not operate in competitive markets, then the effect is "too much" conservation of resources from the standpoint of economic efficiency....

A good measure of the value which society places on resources used in the manufacture of beverage containers--glass, steel, and aluminum--is the market price of recycled glass, steel and aluminum, since these are relatively good substitutes for the virgin materials. Current prices for used glass and steel are apparently not sufficiently high to induce substantial recycling of these materials. However, should these resources become relatively more scarce, then the market price of scrap could be expected to rise sufficiently to induce greater conservation of new glass and steel through recycling....

Since market prices tend to reflect the value to society of resources used in the manufacture of beverage containers, we are not concerned with the rate at which these resources are currently being depleted. As the scarcity of these resources becomes more acute, and given the unlikely possibility that no resource-saving technological advances are made, the prices of these resources should rise, causing the rate at which resources are being depleted to diminish.⁴¹

Even though the BCIM report goes into a lengthy discussion of the relative scarcity of materials used in the manufacture of beverage containers, little or no consideration is given to the major role played by prices in conserving these resources. Projections for the future consumption of these resources are made in a cavalier fashion. However, we have seen recently how the sharp price increases for oil dramatically reduced the consumption of this resource.

The BCIM report notes that:

Current public policy favors the use of virgin materials through the use of the 15 percent federal tax depletion allowance or a 14 percent tax benefit for importation of ore from another country. Recycling scrap does not qualify for similar tax benefits. Differential transportation costs further encourage the use of ore over recycled scrap. For years the Interstate Commerce Commission has authorized a railroad freight rate structure that results in transportation costs for ferrous scrap which are three times those of iron ore.⁴²

I am in full agreement with the authors of the BCIM report on this point.

These differential policies, which inhibit the use of scrap material, should be abolished.

9. Health (BCIM report, Chapter IX)

The DECD report deals with the health aspects of container legislation only in passing. The reason for this is that existing data for assessing the effects of mandatory deposit legislation on health are totally inadequate.

⁴¹ DECD report, pp. VIII-44, 45.

⁴² BCIM report, p. VIII-6.

It is not at all clear that container legislation would diminish health hazards. With container legislation, hazards could be expected to diminish because (1) fewer cans with pull tabs would be sold, (2) fewer containers would be littered, thereby reducing the exposure to broken glass and metal shreds, and (3) refillable containers are less susceptible to breakage than are one-way glass containers. On the other hand, there are health hazards associated with a refillable container system. These include (1) foreign matter remaining in bottles after filling, (2) the unsanitary nature of unclean empties prior to their refilling, and (3) a substantial increase in the handling of glass and metal containers.

Foreign matter in beverages is indeed a rare phenomenon, but one still reads occasionally of hefty law suits resulting from such a situation. While retailers, distributors, and bottlers can and do take precautions to minimize the health hazard presented by unclean empty containers, it must be acknowledged that a small health hazard still remains. No data exist, to my knowledge, on the extent of this hazard. Furthermore, empty refillable containers stored in the household likely present an even larger health hazard. Households do not, as a rule, engage regular fumigation services, nor, as the Vermont experience suggests, do they all clean their containers prior to returning them, notwithstanding the requirement of the law.

Although refillable glass containers are less susceptible to breakage than are one-way glass containers, they still break and chip. It is quite conceivable, therefore, that the substantial increase in handling returnable containers presents a significantly greater hazard than does the one-way container. Again, the data are inadequate for making a reliable comparison.

For these reasons, then, the net effect of a mandatory deposit law on various aspects of health is not at all clear.